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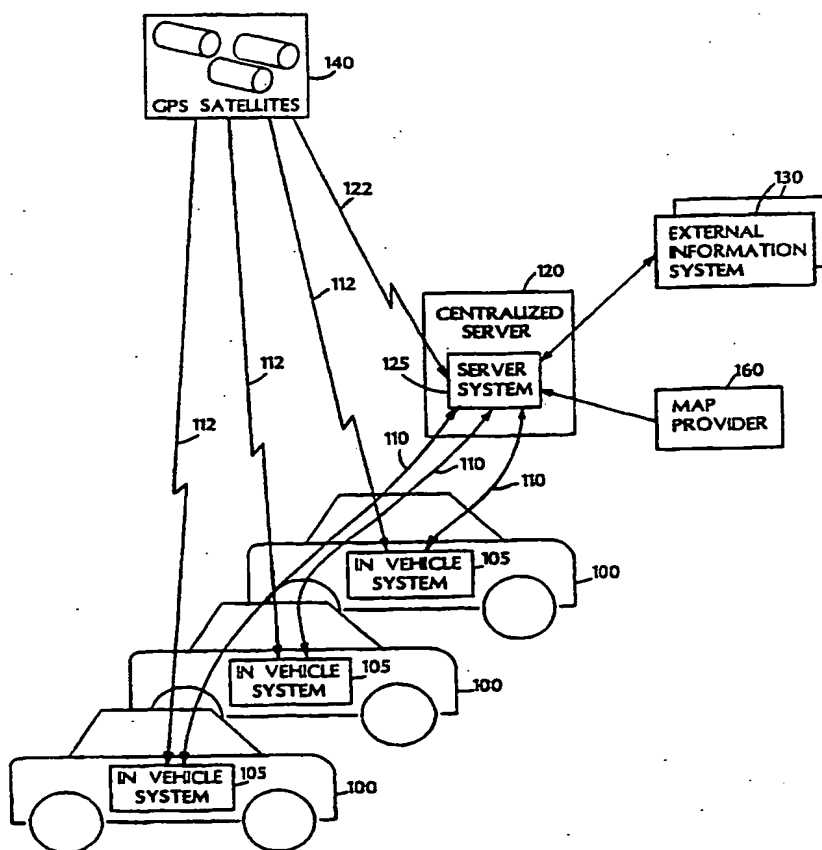
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : G01C 21/20, G08G 1/0969, G09B 29/10, G08G 1/01		A3	(11) International Publication Number: WO 99/09374 (43) International Publication Date: 25 February 1999 (25.02.99)
(21) International Application Number: PCT/US98/17237 (22) International Filing Date: 19 August 1998 (19.08.98) (30) Priority Data: 60/056,150 19 August 1997 (19.08.97) US (71) Applicant (for all designated States except US): SIEMENS CORPORATION [US/US]; 186 Wood Avenue South, Iselin, NJ 08830 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): KNOCKEART, Ronald, P. [US/US]; 848 Shrewsbury Drive, Clarkston, MI 48348 (US). DRURY, Bob [US/US]; 24507 Park Ridge Court, Novi, MI 48475 (US). RODE, Melvin, A. [US/US]; 6 Sterling Hill, Oakton, MI 48459 (US). BROWN, Steven [US/US]; 14114 Peterboro, Sterling Heights, MI 48313 (US). ASHER, Harry [US/US]; 31792 Rush Street, Garden City, MI 48135 (US). JOZEFOWICZ, Paul, A. [US/US]; 25180 Chippendale, Roseville, MI 48066 (US). (74) Agent: SIEMENS CORPORATION, 186 Wood Avenue South, Iselin, NJ 08830, US.		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With a revised version of the international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 14 May 1999 (14.05.99) (88) Date of publication of the revised version of the international search report: 11 November 1999 (11.11.99)	

(54) Title: **VEHICLE INFORMATION SYSTEM**

(57) Abstract

A vehicle information system which includes an in-vehicle system (105) and a centralized server system (120). The in-vehicle system communicates with the server system using a wireless communication link (110), such as over a cellular telephone system. A position system, such as a set of GPS satellites (140), provides positioning signals that are used by the in-vehicle systems, and optionally by the centralized server system to increase the accuracy of position estimates. In one version of the system, an operator specifies a destination to an in-vehicle system which validates the destination. The in-vehicle system transmits specification of the destination to a server system (125) at the centralized server. The server system computes a route to the destination and transmits the computed route to the in-vehicle system. The in-vehicle system guides the operator along the route. If the in-vehicle system detects that the vehicle has deviated from the planned route, it replans a new route to the destination using an in-vehicle map database.



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INTERNATIONAL SEARCH REPORT

Internati Application No
PCT/US 98/17237

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G01C21/20 G08G1/0969 G09B29/10 G08G1/01

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G01C G08G G09B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96 07110 A (MANNINGS ROBIN THOMAS ;BRITISH TELECOMM (GB); WALL NIGEL DAVID CHA) 7 March 1996 (1996-03-07)	1,4,11, 16, 40-44, 61,66-71
Y	the whole document	2,3,5,6, 10
Y	PATENT ABSTRACTS OF JAPAN vol. 013, no. 131 (P-850), 31 March 1989 (1989-03-31) & JP 63 300399 A (MITSUBISHI ELECTRIC CORP), 7 December 1988 (1988-12-07) abstract	2,3,5,6, 10
X	EP 0 379 198 A (SHARP KK) 25 July 1990 (1990-07-25) claim 1.	8
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

1 September 1999

Date of mailing of the international search report

15.09.99

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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X	US 5 539 645 A (MANDHYAN INDUR B ET AL) 23 July 1996 (1996-07-23) column 7, line 27 - line 46 column 8, line 3 - line 5 ---	40-47
X	WO 96 00373 A (RAMAKRISHNAN RAMESH ; SHIELDS ENTERPRISES INC (US); BEHR DAVID A (U) 4 January 1996 (1996-01-04) page 17, line 13 - page 18, line 28 page 19, line 1 - line 26 page 25, line 10 - line 19 page 27, line 10 - line 16 page 35, line 35 - page 36, line 5 ---	48-52,59
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INTERNATIONAL SEARCH REPORT

Internati Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 786 646 A (NAVIGATION TECHNOLOGIES CORP) 30 July 1997 (1997-07-30) abstract column 29, line 20 - column 31, line 14 -----	62, 63, 65

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 98/17237

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 9, 15, 20, 25, 38
because they relate to subject matter not required to be searched by this Authority, namely:
Rule 39.1(vi) PCT - Program for computers
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-8,10

Vehicle information system in which a server provides a vehicle with information upon its request for guidance.

2. Claims: 11-14,16-19,21,34

Method and system for tracking a vehicle using positioning system signals.

3. Claims: 22-24,26-28,35-37

Method and system for detecting that a vehicle has deviated from a planned route.

4. Claims: 29-33

Method and system for validating a location specification using an in-vehicle map database.

5. Claim : 39

Autonomous re-planning upon deviation from a planned route.

6. Claims: 40-47

Method for collecting traffic information in which vehicles transmit logged data to a server.

7. Claims: 48-52

Category-based method for specifying a destination to a vehicle navigation system.

8. Claims: 53-55

Method for vehicle navigation in which an in-vehicle map database includes a subset of the data comprised in a server map database.

9. Claims: 56-58

Structure of an in-vehicle map database and method of accessing the information contained therein.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

10. Claims: 59,60

Method for transmitting a route to a vehicle navigation system.

11. Claim : 61

Vehicle navigation system using server route planning and dead reckoning.

12. Claims: 62-65

Method for updating an in-vehicle information system using an information version number.

13. Claim : 66

Vehicle information server system coupled to an external information system.

14. Claims: 67-71

Method for providing traffic related information to a user.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 98/17237

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INTERNATIONAL SEARCH REPORT

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International Application No

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